Complete Summary

GUIDELINE TITLE

Acute coronary syndromes. A national clinical guideline.

BIBLIOGRAPHIC SOURCE(S)

Scottish Intercollegiate Guidelines Network (SIGN). Acute coronary syndromes. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2007 Feb. 53 p. (SIGN publication; no. 93). [230 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline was issued in 2007 and will be considered for review in three years. Any updates to the guideline in the interim period will be noted on Scottish Intercollegiate Guidelines Network (SIGN) Web site.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s)/intervention(s) for which important revised regulatory and/or warning information has been released.

- February 28, 2008, Heparin Sodium Injection: The U.S. Food and Drug Administration (FDA) informed the public that Baxter Healthcare Corporation has voluntarily recalled all of their multi-dose and single-use vials of heparin sodium for injection and their heparin lock flush solutions. Alternate heparin manufacturers are expected to be able to increase heparin production sufficiently to supply the U.S. market. There have been reports of serious adverse events including allergic or hypersensitivity-type reactions, with symptoms of oral swelling, nausea, vomiting, sweating, shortness of breath, and cases of severe hypotension.
- June 8, 2007, Troponin-I Immunoassay: Class I Recall of all lots of the Architect Stat Troponin-I Immunoassay. The assay may report falsely elevated or falsely decreased results at and near a low level, which may impact patient treatment.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Acute coronary syndromes

Note: The guideline does not address the management of undifferentiated chest pain with acute heart failure.

GUIDELINE CATEGORY

Counseling
Diagnosis
Evaluation
Management
Rehabilitation
Risk Assessment
Treatment

CLINICAL SPECIALTY

Cardiology
Family Practice
Internal Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide evidence-based recommendations on the in-hospital management of patients with an acute coronary syndrome (ACS), as well as the duration of clopidogrel use beyond hospital discharge following non-ST elevation ACS

TARGET POPULATION

Adult patients with acute coronary syndromes (ACS)

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Evaluation

1. Immediate assessment by an appropriate healthcare professional
2. 12 lead electrocardiogram
3. Measurement of serum troponin concentration

Management/Treatment

Initial Management

1. Patient management within a specialist cardiology service
2. Continuous cardiac rhythm monitoring
3. Oxygen therapy
4. Antiplatelet therapy with pharmacologic including aspirin, clopidogrel, and intravenous glycoprotein IIb/IIIa receptor antagonist
5. Anticoagulant therapy with low molecular weight heparin or fondaparinux therapy or intravenous glycoprotein IIb/IIIa receptor antagonist
6. Immediate intravenous and oral beta blockade
7. Intensive blood glucose control
8. Percutaneous coronary intervention, including treatment with a glycoprotein IIb/IIIa receptor antagonist and intracoronary stent implantation
9. Thrombolytic therapy with a fibrin-specific agent
10. Development of local protocols for rapid treatment of patients
11. Rescue percutaneous coronary interventions

Surgical and Pharmacological Interventions

1. Risk stratification using clinical scores and assessment of cardiac functions
2. Coronary angiography and revascularisation
3. Early pharmacologic intervention with anti-platelet therapy ([aspirin, clopidogrel], statins, beta-blockers, nitrates, calcium channel blockers, angiotensin-converting enzyme [ACE] inhibitors, angiotensin receptor blockers, aldosterone receptor antagonists)

Treatment of Hypoxia and Cardiogenic Shock

1. Non-invasive positive airway pressure ventilation
2. Intravascular volume loading
3. Inotropic therapy
4. Intra-aortic balloon counter pulsation
5. Coronary revascularisation
6. Corrective surgery for mechanical complications of acute myocardial infarction

Counseling

1. Early psychosocial assessment and individualised psychosocial intervention
2. Provision of patient information based on individual patient needs, inclusion of partner/family in receiving information, and use of appropriate audiovisual materials
3. Physician involvement in providing information to patients

MAJOR OUTCOMES CONSIDERED

- Accuracy and timeliness of diagnosis and initiation of appropriate treatment
- Short-term and long-term mortality
- Morbidity
- Cardiac events (e.g. myocardial infarction/reinfarction, cardiac rupture, ventricular fibrillation, cardiogenic shock, cardiac arrest, heart failure)
- Psychological distress

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The evidence base for this guideline was synthesised in accordance with Scottish Intercollegiate Guidelines Network (SIGN) methodology. A systematic review of the literature was carried out using a search strategy devised by a SIGN Information Officer. Databases searched include Medline, Embase, Cinahl, PsychINFO, and the Cochrane Library. For most searches, the year range covered was 1999-2005. Internet searches were carried out on various websites including the New Zealand Guidelines Programme, NELH Guidelines Finder, and the US National Guidelines Clearinghouse. The Medline version of the main search strategies can be found on the SIGN website, in the section covering supplementary guideline material. The main searches were supplemented by material identified by individual members of the development group.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

1++: High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias

1+: Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias

1-: Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias

2++: High quality systematic reviews of case control or cohort studies

High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal

2+: Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal

2-: Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal

3: Non-analytic studies (e.g. case reports, case series)

4: Expert opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Once papers have been selected as potential sources of evidence, the methodology used in each study is assessed to ensure its validity. The result of this assessment will affect the level of evidence allocated to the paper, which will in turn influence the grade of recommendation that it supports.

The methodological assessment is based on a number of key questions that focus on those aspects of the study design that research has shown to have a significant influence on the validity of the results reported and conclusions drawn. These key questions differ between study types, and a range of checklists is used to bring a degree of consistency to the assessment process. Scottish Intercollegiate Guidelines Network (SIGN) has based its assessments on the MERGE (Method for Evaluating Research and Guideline Evidence) checklists developed by the New South Wales Department of Health, which have been subjected to wide consultation and evaluation. These checklists were subjected to detailed evaluation and adaptation to meet SIGN's requirements for a balance between methodological rigour and practicality of use.

The assessment process inevitably involves a degree of subjective judgment. The extent to which a study meets a particular criterion - e.g., an acceptable level of loss to follow up, and, more importantly, the likely impact of this on the reported results from the study will depend on the clinical context. To minimise any

potential bias resulting from this, each study must be evaluated independently by at least two group members. Any differences in assessment should then be discussed by the full group. Where differences cannot be resolved, an independent reviewer or an experienced member of SIGN Executive staff will arbitrate to reach an agreed quality assessment.

Evidence Tables

Evidence tables are compiled by SIGN executive staff based on the quality assessments of individual studies provided by guideline development group members. The tables summarise all the validated studies identified from the systematic literature review relating to each key question. They are presented in a standard format to make it easier to compare results across studies, and will present separately the evidence for each outcome measure used in the published studies. These evidence tables form an essential part of the guideline development record and ensure that the basis of the guideline development group's recommendations is transparent.

Additional details can be found in the companion document titled "SIGN 50: A Guideline Developers' Handbook" (see "Availability of Companion Documents" field in this summary).

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Synthesising the Evidence

Guideline recommendations are graded to differentiate between those based on strong evidence and those based on weak evidence. This judgment is made on the basis of an (objective) assessment of the design and quality of each study and a (perhaps more subjective) judgment on the consistency, clinical relevance and external validity of the whole body of evidence. The aim is to produce a recommendation that is evidence-based, but which is relevant to the way in which health care is delivered in Scotland and is therefore implementable.

It is important to emphasise that the grading does not relate to the importance of the recommendation, but to the strength of the supporting evidence and, in particular, to the predictive power of the study designs from which that data was obtained. Thus, the grading assigned to a recommendation indicates to users the likelihood that, if that recommendation is implemented, the predicted outcome will be achieved.

Considered Judgment

It is rare for the evidence to show clearly and unambiguously what course of action should be recommended for any given question. Consequently, it is not always clear to those who were not involved in the decision making process how

guideline developers were able to arrive at their recommendations, given the evidence they had to base them on. In order to address this problem, SIGN has introduced the concept of considered judgment.

Under the heading of considered judgment, guideline development groups summarise their view of the total body of evidence covered by each evidence table. This summary view is expected to cover the following aspects:

- Quantity, quality, and consistency of evidence
- Generalisability of study findings
- Directness of application to the target population for the guideline
- Clinical impact (i.e., the extent of the impact on the target patient population, and the resources needed to treat them)
- Implementability (i.e., how practical it would be for the NHS in Scotland to implement the recommendation)

Guideline development groups are provided with a pro forma in which to record the main points from their considered judgment. Once they have considered these issues, the group is asked to summarise their view of the evidence and assign a level of evidence to it, before going on to derive a graded recommendation.

Additional detail about SIGN's process for formulating guideline recommendations is provided in Section 6 of the companion document titled "SIGN 50: A Guideline Developers' Handbook" (see "Availability of Companion Documents" field).

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

A: At least one meta-analysis, systematic review of randomized controlled trials (RCTs), or RCT rated as 1++ and directly applicable to the target population; *or*

A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results

B: A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 1++ or 1+

C: A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 2++

D: Evidence level 3 or 4; *or*

Extrapolated evidence from studies rated as 2+

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group

COST ANALYSIS

Cost Effectiveness of Reperfusion Therapies in ST elevation Acute Coronary Syndrome (ACS)

Primary Percutaneous Coronary Intervention (PCI) Compared with In-Hospital Thrombolysis

A systematic review of 10 studies with long term follow up found consistent evidence of lower total costs with primary percutaneous coronary intervention (PCI) compared to in-hospital thrombolysis. These reduced costs were associated with reduced length of hospital stay through early identification and discharge of low risk patients, and need for fewer subsequent procedures. None of the studies contained resource or cost information directly relevant to the National Health Service (NHS).

To apply these findings to the United Kingdom (UK), an economic model was developed using NHS costs (for the year 2003) and the clinical effectiveness data derived by meta-analysis of effectiveness studies. In this model, primary PCI was compared to thrombolysis using reteplase. Primary PCI had a higher cost per case (~550 pounds sterling) but a gain in health status of 0.08, giving an incremental cost effectiveness ratio of about 6,500 pounds sterling for each unit of health state gained. Using streptokinase rather than reteplase increased the incremental cost effectiveness ratio to almost 29,100 pounds sterling per unit of health state gained. This economic evaluation is limited to a six months follow up and does not consider the longer term consequences of treatment with either therapy.

The analysis did not use the conventional health outcome measure of a quality adjusted life year (QALY) but rather expressed benefit as a unit of health state gained. Thus the conventional thresholds for cost per QALY cannot be applied. Rather the results suggest primary PCI could be cost effective compared to thrombolysis using reteplase but are inconclusive in respect of primary PCI compared to thrombolysis using streptokinase.

Primary PCI Compared with Pre-Hospital Thrombolysis

Where there is access to a PCI centre within two hours of symptom onset, one economic evaluation, using French costs and clinical data from a randomised controlled trial, concluded that it was more cost effective to reperfuse ST elevation ACS patients by PCI than by pre-hospital thrombolysis. The one year primary end points for the clinical event-rates of death, non-fatal myocardial infarction, and stroke were not different after primary PCI and prehospital thrombolysis with rescue PCI, but costs were lower for primary PCI. The main reasons for the lower costs in the primary PCI arm were lower initial length of stay and a lower rate of subsequent revascularisations.

A Comparison of Different Thrombolytic Agents

One systematic review of the clinical and cost effectiveness of different thrombolytic agents concluded that the differences in clinical outcome are so small that use of the cheapest product should be advocated. As part of this study an economic model was developed from an NHS perspective, using the British National Formulary (BNF) list prices for thrombolytic agents and excluding any differences in the cost of administration. These prices do not take into account the discounts available to different markets and geographical areas. The modelled results were highly sensitive to variations in the drug costs and the study concluded that the choice of agents should be governed by the relative prices of the drugs, assuming no difference in administration costs.

Cost Effectiveness of Clopidogrel

A cost effectiveness model of clopidogrel use from a UK perspective judged that it was cost effective to prescribe clopidogrel for a 12 month period from the initial event. The model assumed a constant relative risk reduction across all time periods, which is unlikely to be a valid assumption. In addition, baseline clinical event rate data are mainly from 1998 and likely to overstate baseline risk compared to current practice. Beyond three months, the number needed to treat (NNT) to avoid a further event is large (see Table 3 of the original guideline document) and needs to be viewed in the context of increased major bleeding over the 12 months (absolute risk increase 1%, relative risk increase 38%).

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The national open meeting is the main consultative phase of Scottish Intercollegiate Guidelines Network (SIGN) guideline development.

Peer Review

All SIGN guidelines are reviewed in draft form by independent expert referees, who are asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence base supporting the recommendations in the guideline. A number of general practitioners (GPs) and other primary care practitioners also provide comments on the guideline from the primary care perspective, concentrating particularly on the clarity of the recommendations and their assessment of the usefulness of the guideline as a working tool for the primary care team. The draft is also sent to a lay reviewer in order to obtain comments from the patient's perspective. The comments received from peer reviewers and others are carefully tabulated and discussed with the chairman and with the guideline development group. Each point must be addressed and any changes to the guideline as a result noted or, if no change is made, the reasons for this recorded.

As a final quality control check prior to publication, the guideline and the summary of peer reviewers' comments are reviewed by the SIGN Editorial Group for that guideline to ensure that each point has been addressed adequately and that any risk of bias in the guideline development process as a whole has been minimised. Each member of the guideline development group is then asked formally to approve the final guideline for publication.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the Scottish Intercollegiate Guidelines Network (SIGN) and National Guideline Clearinghouse (NGC)*: In addition to these evidence-based recommendations, the guideline development group also identifies points of best clinical practice in the full-text guideline document.*

The grades of recommendations (A–D) and levels of evidence (1++, 1+, 1-, 2++, 2+, 2-, 3, 4) are defined at the end of the "Major Recommendations" field.

Presentation, Assessment, and Diagnosis

Clinical Presentation and Immediate Assessment

D - Patients with suspected acute coronary syndrome (ACS) should be assessed immediately by an appropriate healthcare professional and a 12 lead electrocardiogram should be performed.

Biochemical Diagnosis in ACS

C - In patients with suspected acute coronary syndrome, serum troponin concentration should be measured on arrival at hospital to guide appropriate management and treatment.

B - To establish a diagnosis in patients with an acute coronary syndrome, a serum troponin concentration should be measured 12 hours from the onset of symptoms.

Initial Management

Service Delivery

C - Patients with an acute coronary syndrome should be managed within a specialist cardiology service.

Cardiac Monitoring

D - Patients with an acute coronary syndrome should have continuous cardiac rhythm monitoring.

Oxygen Therapy

D - Oxygen therapy should be administered to patients with hypoxia, pulmonary oedema or continuing myocardial ischaemia.

Antiplatelet Therapy

A - Patients with an acute coronary syndrome should be treated immediately with aspirin (300 mg).

A - In the presence of ischaemic electrocardiographic changes or elevation of cardiac markers, patients with an acute coronary syndrome should be treated immediately with both aspirin (300 mg) and clopidogrel (300 mg) therapy.

B - High-risk patients with non-ST elevation acute coronary syndrome should be treated with an intravenous glycoprotein IIb/IIIa receptor antagonist, particularly if they are undergoing percutaneous coronary intervention.

Anticoagulant Therapy

A - In the presence of ischaemic electrocardiographic changes or elevation of cardiac markers, patients with an acute coronary syndrome should be treated immediately with low molecular weight heparin or fondaparinux.

B - Patients with an ST elevation acute coronary syndrome who do not receive reperfusion therapy should be treated immediately with fondaparinux.

Beta Blockers

B - In the absence of bradycardia or hypotension, patients with an acute coronary syndrome in Killip class I should be considered for immediate intravenous and oral beta-blockade.

Glycaemic Control

B - Patients with clinical myocardial infarction and diabetes mellitus or marked hyperglycaemia (*>11.0 mmol/l*) should have immediate intensive blood glucose control. This should be continued for at least 24 hours.

Reperfusion Therapy for ST Elevation Acute Coronary Syndromes

Primary Percutaneous Coronary Intervention

A - Patients with an ST elevation acute coronary syndrome should be treated immediately with primary percutaneous coronary intervention.

A - Patients undergoing primary percutaneous coronary intervention should be treated with a glycoprotein IIb/IIIa receptor antagonist.

A - Intracoronary stent implantation should be used in patients undergoing primary percutaneous coronary intervention.

Thrombolytic Therapy

D - When primary percutaneous coronary intervention cannot be provided within 90 minutes of diagnosis, patients with an ST elevation acute coronary syndrome should receive immediate thrombolytic therapy.

C - Local protocols should be developed for the rapid treatment of patients presenting with ST elevation acute coronary syndromes. Consideration should be given to pre-hospital and admission thrombolysis, and to the emergency transfer of patients to interventional centres for primary percutaneous coronary intervention.

B - Thrombolysis should be conducted with a fibrin-specific agent.

'Rescue' Percutaneous Coronary Intervention

B - Patients presenting with ST elevation acute coronary syndrome within six hours of symptom onset, who fail to reperfuse following thrombolysis, should be considered for rescue percutaneous coronary intervention.

Risk Stratification and Non-Invasive Testing

Risk Stratification

C - Risk stratification using clinical scores should be conducted to identify those patients with an acute coronary syndrome who are most likely to benefit from early therapeutic intervention.

Assessment of Cardiac Function

C - In patients with an acute coronary syndrome, assessment of cardiac function should be conducted in order to identify those patients at high risk and to aid selection of appropriate therapeutic interventions.

Invasive Investigation and Revascularisation

Non-ST Elevation Acute Coronary Syndrome

B - Patients with non-ST elevation acute coronary syndromes at medium or high risk of early recurrent cardiovascular events should undergo early coronary angiography and revascularisation.

ST Elevation Acute Coronary Syndrome

C - Patients with ST elevation acute coronary syndromes treated with thrombolytic therapy should be considered for early coronary angiography and revascularisation.

Early Pharmacologic Intervention

Antiplatelet Therapy

A - Following an acute coronary syndrome all patients should be maintained on long term aspirin therapy.

B - In addition to long term aspirin, clopidogrel therapy should be continued for three months in patients with non-ST elevation acute coronary syndromes.

A - In addition to long term aspirin, clopidogrel therapy should be continued for up to four weeks in patients with ST elevation acute coronary syndromes.

Statin Therapy

B - Patients with an acute coronary syndrome should be commenced on long term statin therapy prior to hospital discharge.

Beta-Blocker and Antianginal Therapy

C - Patients with unstable angina or evidence of myocyte necrosis should be maintained on long term beta-blocker therapy.

A - Patients with clinical myocardial infarction should be maintained on long term beta-blocker therapy.

Angiotensin-Converting Enzyme (ACE) Inhibitors

B - Patients with unstable angina or myocyte necrosis should be commenced on long term angiotensin-converting enzyme inhibitor therapy.

A - Patients with clinical myocardial infarction should be commenced on long term angiotensin-converting enzyme inhibitor therapy within the first 36 hours.

Angiotensin Receptor Blockers

A - Patients with clinical myocardial infarction complicated by left ventricular dysfunction or heart failure should be commenced on long term angiotensin receptor blocker therapy if they are intolerant of angiotensin converting-enzyme inhibitor therapy.

Aldosterone Receptor Antagonists

B - Patients with clinical myocardial infarction complicated by left ventricular dysfunction (*ejection fraction <0.40*) in the presence of either clinical signs of heart failure or diabetes mellitus should be commenced on long term eplerenone therapy.

<u>Treatment of Hypoxia and Cardiogenic Shock</u>

Non-Invasive Ventilation

B - Patients with an acute coronary syndrome complicated by acute cardiogenic pulmonary oedema and hypoxia should be considered for non-invasive positive airway pressure ventilation.

Intravascular Volume Loading and Inotropic Therapy

D - In the absence of clinical evidence of volume overload, patients with an acute coronary syndrome complicated by hypotension and cardiogenic shock should be considered for intravascular volume loading.

D - In the presence of clinical evidence of volume overload, patients with an acute coronary syndrome complicated by hypotension and cardiogenic shock should be considered for inotropic therapy.

Intra-Aortic Balloon Counterpulsation

D - Patients with an acute coronary syndrome complicated by cardiogenic shock, myocardial rupture *(ventricular septal defect and papillary muscle rupture)* or refractory ischaemia should be considered for intra-aortic balloon counterpulsation especially when contemplating emergency coronary revascularisation or corrective surgery.

Coronary Revascularisation

C - Patients presenting with cardiogenic shock due to left ventricular failure within six hours of acute myocardial infarction should be considered for immediate coronary revascularisation.

Cardiac Surgery

D - Patients with mechanical complications of acute myocardial infarction (*ventricular septal, free wall or papillary muscle rupture*) should be considered for corrective surgery within 24 to 48 hours.

Patient Support and Information Needs

Early Psychosocial Interventions

B - Patients with acute coronary syndromes should be offered early psychosocial assessment and individualised psychosocial intervention with an emphasis on identifying and addressing health beliefs and cardiac misconceptions.

Information Needs of Patients

C - Provision of patient information should be determined by individual patient needs. Partner/family inclusion in receiving information should be considered and appropriate audiovisual materials employed.

D - Physicians should be involved in providing information to patients.

Definitions:

Grades of Recommendation

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

A: At least one meta-analysis, systematic review of randomized controlled trials (RCTs), or RCT rated as 1++ and directly applicable to the target population; *or*

A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results

B: A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 1++ or 1+

C: A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 2++

D: Evidence level 3 or 4; *or*

Extrapolated evidence from studies rated as 2+

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group

Levels of Evidence

1++: High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias

1+: Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias

1-: Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias

2++: High quality systematic reviews of case control or cohort studies
High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal

2+: Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal

2-: Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal

3: Non-analytic studies (e.g. case reports, case series)

4: Expert opinion

CLINICAL ALGORITHM(S)

A clinical algorithm, "Summary of Management of Acute Coronary Syndromes" is provided in the original guideline document.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate in-hospital management of patients with an acute coronary syndrome

POTENTIAL HARMS

- Angiotensin converting enzyme (ACE) inhibitor drugs have significant side effects and are not well tolerated by up to a third of patients.
- Antiplatelet and anticoagulant therapies carry the risk of bleeding complications.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Absolute contraindications for thrombolysis include recent haemorrhage, trauma or surgery, coma, ischaemic stroke within three months, aortic dissection, bleeding diatheses, known structural cerebrovascular lesions including neoplasms, and any prior intracerebral haemorrhage. A full list of contraindications can be found in the British National Formulary (BNF; www.bnf.org). Primary percutaneous coronary intervention (PCI) incurs a small bleeding risk from the administration of antiplatelet and anticoagulant therapies, and some relative contraindications may be common to both reperfusion strategies.
- Immediate beta-blocker therapy should be avoided in patients with acute pulmonary oedema and acute left ventricular failure.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is, however, advised that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Implementation of national clinical guidelines is the responsibility of each National Health Service (NHS) Board and is an essential part of clinical governance. It is acknowledged that every Board cannot implement every guideline immediately on publication, but mechanisms should be in place to ensure that the care provided is reviewed against the guideline recommendations and the reasons for any differences assessed and, where appropriate, addressed. These discussions should involve both clinical staff and management. Local arrangements may then be made to implement the national guideline in individual hospitals, units and practices, and to monitor compliance. This may be done by a variety of means including patient-specific reminders, continuing education and training, and clinical audit.

Key points for audit are identified in the original guideline document.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators
Chart Documentation/Checklists/Forms
Clinical Algorithm
Foreign Language Translations
Patient Resources
Quick Reference Guides/Physician Guides

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007 Feb

GUIDELINE DEVELOPER(S)

Scottish Intercollegiate Guidelines Network - National Government Agency [Non-U.S.]

SOURCE(S) OF FUNDING

Scottish Executive Health Department

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Guideline Development Group: Dr Iain Findlay (*Chair*) Consultant Cardiologist, Royal Alexandra Hospital, Paisley; Professor David Newby (*Vice Chair*) Professor of Cardiology and Consultant Cardiologist, Royal Infirmary of Edinburgh; Dr David Pedley (*Secretary*) Consultant in Emergency Medicine, The James Cook University Hospital, Middlesbrough; Mr Geoff Berg, Clinical Director of Cardiac Surgery, Western Infirmary, Glasgow; Dr David Caesar, Specialist Registrar, Emergency Medicine, Royal Infirmary of Edinburgh; Ms Mhairi Campbell, Physiotherapist/Cardiac Rehabilitation Coordinator, Royal Alexandra Hospital, Paisley; Ms Joyce Craig, Senior Health Economist, NHS Quality Improvement

Scotland, Glasgow; Ms Shirley Douglas-Keogh, Senior Nurse/Ward Manager, Royal Infirmary of Edinburgh; Ms Diane Edgar, Cardiac Nurse Specialist/Lead Clinician CHD MCN, Borders General Hospital, Melrose; Dr Robert Finnie, General Practitioner, Dedridge Health Centre, Livingston; Dr Nicholas Goodfield, Consultant Cardiologist, Stobhill Hospital, Glasgow; Dr Graham Hillis, Consultant Cardiologist, Aberdeen Royal Infirmary; Dr Mike Langran, General Practitioner, Aviemore Health Centre, Invernesshire; Dr Andrew Marsden, Medical Director, Scottish Ambulance Service, Edinburgh; Dr Crawford McGuffie, Consultant in Emergency Medicine, Crosshouse Hospital, Kilmarnock; Dr Denis St J O'Reilly, Consultant Clinical Biochemist, Glasgow Royal Infirmary; Dr Morag Osborne, Consultant Clinical Psychologist, Southern General Hospital, Glasgow; Mr George Selkirk, Lay Representative, Edinburgh; Eur. Ing. Granville Solloway, Lay Representative, Orkney; Dr Campbell Tait, Consultant Haematologist, Glasgow Royal Infirmary; Dr Lorna Thompson, Programme Manager, SIGN; Mr Gordon Thomson, Principal Pharmacist, Ninewells Hospital, Dundee; Dr Neal Uren, Consultant Cardiologist, Royal Infirmary of Edinburgh; Ms Joanna Welsh, Information Officer, SIGN

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the guideline development group made declarations of interest and further details of these are available on request from the Scottish Intercollegiate Guidelines Network (SIGN) Executive.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline was issued in 2007 and will be considered for review in three years. Any updates to the guideline in the interim period will be noted on Scottish Intercollegiate Guidelines Network (SIGN) Web site.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Scottish Intercollegiate Guidelines Network (SIGN) Web site.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Quick reference guide: Heart disease. Scottish Intercollegiate Guidelines Network, 2007 Feb. 31 p. Available in Portable Document Format (PDF) from the SIGN Web site.
- SIGN 50: A guideline developer's handbook. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network. (SIGN publication; no. 50). Available from the SIGN Web site.
- Appraising the quality of clinical guidelines. The SIGN guide to the AGREE (Appraisal of Guidelines Research & Evaluation) guideline appraisal instrument. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2001. Available from the SIGN Web site.

- Management of coronary heart disease: A national clinical and resource impact assessment. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2007 Feb. 120 p. Available in Portable Document Format (PDF) from the SIGN Web site.
- Excel spreadsheets to assist health boards to estimate their local costs (used in conjunction with the national clinical and resource impact assessment). Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2007 Feb. Available from the SIGN Web site.

PATIENT RESOURCES

The following is available:

- Acute coronary syndromes for patients. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2007 Feb. 26 p.

Copies available in Portable Document Format (PDF) from the Scottish Intercollegiate Guidelines Network (SIGN) Web site. Urdu translation is also available from the SIGN Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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